

WHAT WE CLAIM IS:

- 5 1. An arbiter for controlling access to a shared resource by at least two devices,
the arbiter including:

 a set of control bits for each of the at least two devices, each set of control
bits accessible by the associated one of the at least two devices, and including
a request bit and a grant bit;

- 10 arbitration logic, coupled to the set of control bits, for controlling access to
the shared resource, the arbitration logic operating responsive to the request
bits for each of the at least two devices to set the grant bit of one of the at least
two devices according to an arbitration protocol.

- 15 2. The arbiter of claim 1, wherein the set of control bits further includes an
override bit for enabling a first one of the at least two devices to take control
of the shared resource away from a second one of the at least two device.

3. The arbiter of claim 1, wherein the set of control bits further includes a reset
20 bit for resetting the mux.

4. The arbiter of claim 1, wherein the arbitration protocol includes an IDLE state
and a GRANT state for each one of the at least two devices, and wherein
transitions are made between the IDLE states and the GRANT states in
25 response to the set of control bits.

5. The arbiter of claim 1, wherein the shared resource is a disk drive, and wherein the arbiter further includes a mux, coupled between the at least two devices and the disk drive, wherein each of the at least two devices provides input signals to the mux, and wherein the arbitration logic controls selection of the mux to thereby control access to the disk drive by the at least two devices.
6. The arbiter of claim 5, further comprising at least two controllers, each one of the at least two controllers disposed between a corresponding one of the at least two devices and the mux, each controller providing signals for controlling operation of the disk drive.
7. The arbiter of claim 6, wherein the disk drive is a Serial AT Attached (SATA) disk drive, the controller is a SATA controller and the mux is a SATA mux.
8. A method for controlling access to a shared resource by at least two devices, the method including the steps of
- selecting, responsive to a set of control bits associated with at least two devices coupled to the shared resource, one of the at least two devices for access to the shared resource, wherein the set of control bits includes a request bit and a grant bit for each one of the at least two devices.
9. The method according to step 8, includes the steps of granting access to at least one of the devices by setting the grant bit associated with the at least one of the device, in response to the request bit associated with the at least one of the devices being set.

10. The method according to claim 9, further including the step of a first one of the at least two devices taking control of the shared resource away from a second one of the at least two devices by setting an override bit associated with the first one of the at least two devices.
- 5 11. A method for controlling access to a shared resource among a first device and a second device, the method including an arbitration process having a first device idle state, a first device grant state, a second device idle state and a second device grant state, the method including the steps of:
- 10 the first device requesting access to the shared resource;
- granting access to the first device and transitioning the arbitration process from a first device idle state to a first device grant state in response to the first device requesting access to the shared resource;
- indicating, by the first device, that it has completed use of the resource; and
- 15 transitioning the arbitration process from the first device grant state to the first device idle state in response to the indication from the first device that it has completed use of the shared resource.
- 20 12. The method of claim 11, wherein the step of requesting access by the first device includes the step of the first device setting a request bit.
13. The method of claim 11, wherein the step of indicating includes the steps of the first device clearing a request bit.

14. The method of claim 11 wherein the step of granting includes the step of setting a grant bit associated with the first device.
 15. The method of claim 11, further including the step of requesting, by the second device, access to the shared resource, and transitioning, after the transition to the first device idle state, to the second device grant state.
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